CHAPTER 1: PURPOSE AND NEED FOR ACTION

This chapter is organized in two main parts. The first part ("Highway Reconstruction") presents the purpose and need for the proposed upgrading of U.S. Highway 189 (US-189) in Provo Canyon, as part of the Provo Canyon Highway Improvement Project (Project). The second part ("Trail Extension") presents the purpose and need for the proposed extension of the Provo/Jordan River Parkway Trail through Provo Canyon.

HIGHWAY RECONSTRUCTION

U.S. Highway 189 is a principal arterial highway traversing the Wasatch Mountains southeast of Salt Lake City, Utah (Figure 1-1). From its connections with Interstate 15 (I-15) and U.S. Highway 40 (US-40), it provides a major connection between the Provo/Orem metropolitan area and Heber Valley, and local access to the recreational resources of Provo Canyon.

The original unimproved highway from Utah Valley east through Provo Canyon and Heber Valley was a rural, two-lane facility built in the late 1920s, designed to the standards of that time, and intended to meet a traffic demand far less than today's. Its inconsistent design speeds, areas of restricted sight distance, inadequate shoulder widths, and over-capacity traffic volumes all contributed to accident rates considerably greater than those experienced on other two-lane highways in Utah with similar traffic volumes. As a result, public and agency interest and concern fostered the development of the Project in the early 1970s.

To provide context for the purpose and need statement, this section consists of the following parts:

- Project History
- Current Status of Project Segments
- Statement of Purpose and Need

Project History

A recent history of the Project is detailed below. Figure 1-2 provides a graphical summarization of the development of the Project.

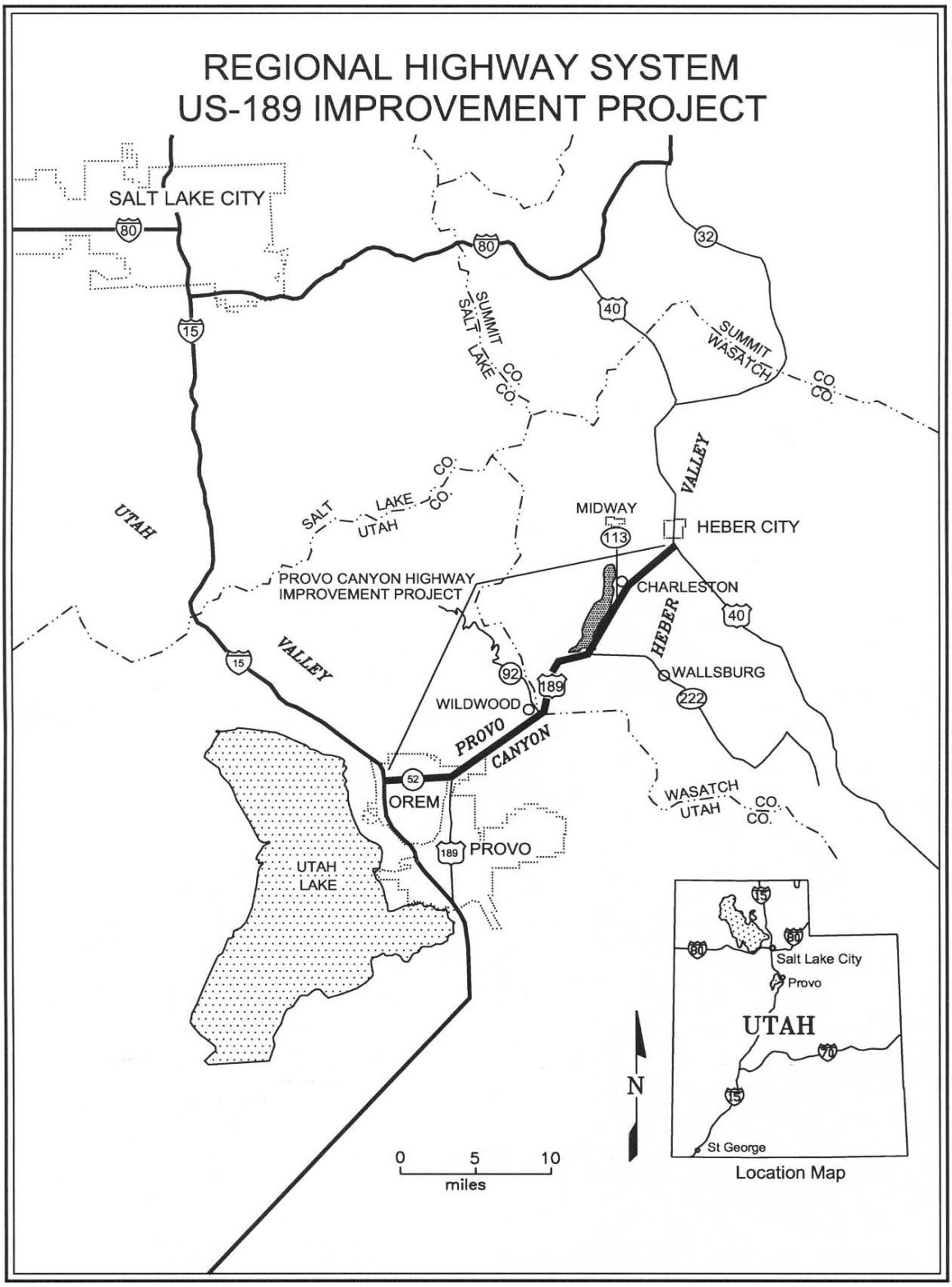


Figure 1-1. Regional Highway System, Provo Canyon Highway Improvement Project.

YEAR	PROJECT SEGMENT				
	OREM TO MUDOCK DIVERSION	MURDOCK DIVERSION TO UPPER FALLS	UPPER FALLS TO WILDWOOD	WILDWOOD TO DEER CREEK STATE PARK	DEER CREEK STATE PARK TO HEBER
1970-1980	EIS COMPLETED				
1980-1985	CONSTRUCTED				
1985-1990	SEIS COMPLETED				
1990-1995		CONSTRUCTED	RE-EVALUATION		
1995-2000			CONSTRUCTED	RE-EVALUATION	
2000-PRESENT			POST-CONSTRUCTION (WALL TREATMENT)	SEIS COMPLETED	

Figure 1-2. History of the Provo Canyon Highway Improvement Project.

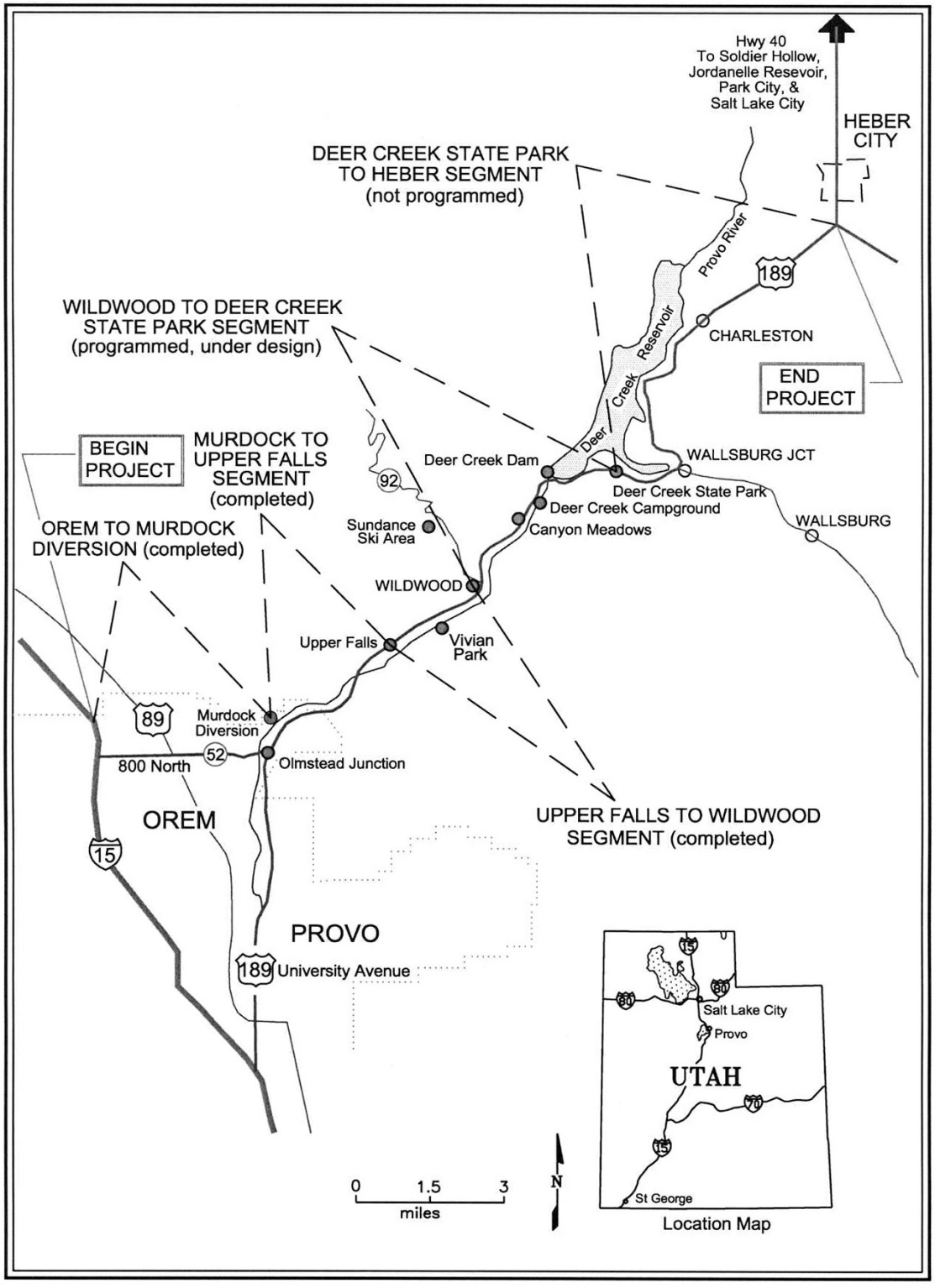


Figure 1-3. Overall Project Area, Provo Canyon Highway Improvement Project.

1971-1978: Environmental Impact Statement (EIS)

Between 1971 and 1978, the State of Utah Department of Transportation (UDOT) prepared an Environmental Impact Statement (EIS) that evaluated the existing and projected traffic capacity problems along SR-52 (800 North in Orem) and US-189 between two major north-south routes, I-15 in Utah Valley and US-40 in Heber City (FHWA 1978). The preferred alternative in the 1978 EIS involved the following elements:

- Widening SR-52 (800 North in Orem) to four lanes from US-89 (Center Street) in Orem to its intersection with US-189 at Olmstead Junction (Olmstead);

- Improving US-189 from Olmstead to Vivian Park by constructing passing lanes along the existing two-lane roadway;

- Improving US-189 between Vivian Park and Wildwood, by making improvements on the existing alignment; and

- Making "timely improvements of a non-major character" (essentially the "no-build" alternative) on US-189 from Wildwood to Heber City.

In October 1979, the Federal Highway Administration (FHWA) issued a Record of Decision (ROD) approving the preferred alternative identified in the 1978 EIS.

1984-1986: Construction from Orem to Murdock Diversion

Based on the 1978 EIS and ROD, UDOT proceeded with the reconstruction of 800 North (from Orem to Olmstead Junction) and with improvements to US-189 from Olmstead to the Murdock Diversion, just above the mouth of Provo Canyon. Construction on these sections proceeded from 1984 to 1986.

1986: First Lawsuit

Construction of the next segment of US-189, from Murdock Diversion to Upper Falls, was started on September 11, 1986. On September 12, 1986, a lawsuit was filed in the U.S. District Court for the District of Utah (Civil No. 86-C-0845W) challenging the ongoing construction. On that same day, the U.S. District Court issued a temporary restraining order (TRO), halting the ongoing construction activities. In November 1986, the court issued a stipulated dismissal of the case, based upon the agreement that five items of work were exempted and allowed to proceed (Utah Power and Light flume construction, Provo City water collection system and supply lines construction, Salt Lake Aqueduct relocation, Provo River Training Channel construction, and construction of two new bridges) and UDOT and FHWA would prepare a Supplemental EIS (SEIS) before proceeding with any further construction. The exempted work took place from 1987 through 1989.

1987-1989: First SEIS

On March 20, 1987, following four public information meetings held during 1986, FHWA and UDOT published a Notice of Intent in the Federal Register announcing that a SEIS would be

prepared for a proposal to improve US-189 through the Provo Canyon from Olmstead to Heber City. The Notice of Intent stated that the decision to prepare an SEIS was based on the presence of changed conditions, such as accelerated traffic growth and revised environmental requirements, as well as certain deficiencies in the 1978 EIS, and design revisions not covered in that document.

On November 29, 1989, the FHWA signed the Final SEIS for the Project. The 1989 SEIS maintained the same termini defined in the 1978 EIS (I-15 to US-40) but emphasized improvements to US-189 from its junction with SR-52 at Olmstead on the west to the intersection of US-189 and US-40 in Heber City on the east. The preferred alternative in the 1989 SEIS involved the upgrade of US-189 to four lanes from Murdock Diversion to Heber City. The alignment for the four-lane highway largely followed the existing location of US-189.

On March 21, 1990, FHWA signed a ROD approving the preferred alternative in the 1989 SEIS. For purposes of final design and construction, the project approved in the 1990 ROD was divided into the four following segments (see Figure 1-3):

- Murdock Diversion to Upper Falls Segment - 5.5 kilometers (3.4 miles),
- Upper Falls to Wildwood Segment - 4.0 kilometers (2.5 miles),
- Wildwood to Deer Creek State Park Segment - 8.5 kilometers (5.3 miles), and
- Deer Creek State Park to Heber City Segment - 15.3 kilometers (9.5 miles).

From 1987 to 1989, concurrently with preparation of the 1989 SEIS, UDOT completed the relocation of utility lines and preparation of portions of roadway earthwork between Murdock Diversion and Vivian Park, as allowed by the court order in the 1986 lawsuit.

1990-1994: Construction from Murdock Diversion to Upper Falls

Following the 1990 ROD, construction proceeded on the Murdock Diversion to Upper Falls Segment, which was completed in 1994.

1993: Re-Evaluation of Upper Falls to Wildwood

In 1993, the FHWA and UDOT prepared a Re-Evaluation for the Upper Falls to Wildwood Segment, in order to consider alternatives for addressing a range of issues involving the preferred alignment in the 1989 SEIS. Based on the 1993 Re-Evaluation, the FHWA and UDOT adopted a new preferred alternative in this section - the "Modified Twin Tunnel Alternative."

1994-1995: Value Engineering (VE) Study and Re-Evaluation of Wildwood to Deer Creek State Park

In 1994, the FHWA and UDOT conducted a Value Engineering (VE) study for the Wildwood to Deer Creek State Park Segment. The VE Study considered a large number of alternative alignments and design modifications to address a range of issues. In 1995, the FHWA and UDOT prepared a

Re-Evaluation, which was based on the additional information developed in the 1994 VE study. Based on the Re-Evaluation, the FHWA and UDOT decided to shift the preferred alternative in this section away from the Provo River in the vicinity of the Hoover Slide.

1996-1998: Second Lawsuit

On February 29, 1996, a second lawsuit (Civil No. 2:96-CV-0186C) was filed in U.S. District Court for the District of Utah challenging the Project in general and the on-going construction of the Upper Falls to Wildwood Segment in particular. A motion for a TRO and a preliminary injunction to halt the construction was filed on April 8, 1996. The UDOT ceased work on the project until the motion for the TRO was denied on April 10, 1996. Construction then started while an expedited hearing was held, and the motion for the preliminary injunction was denied on May 7, 1996.

On November 20, 1998, the court dismissed the lawsuit based on a stipulation ("1998 Stipulation") entered by UDOT. Under the terms of the 1998 Stipulation, UDOT made the following commitments: (1) it would prepare a new SEIS prior to implementing the next phase of construction of the Project and this SEIS would be subject to all the procedures and requirements of the National Environmental Policy Act, and (2) it would hold a pre-scoping meeting with the plaintiffs to discuss the issues associated with the Project when the SEIS was initiated. Pertinent court documents associated with the with the dismissal and stipulation are included in Appendix A.

1996-2002: Construction from Upper Falls to Wildwood

Construction on the Upper Falls to Wildwood Segment was initiated in 1996 and largely completed in 2000, in accordance with the modified alternative described in a 1993 Re-Evaluation. Final cut slope treatment in some portions of the Upper Falls to Wildwood Segment was not completed under the original construction contract in 2000. The final cut slope treatments for the Upper Falls to Wildwood Segment were completed in 2002, in accordance with the modifications approved in a 2001 Re-Evaluation.

1996: Construction of Haul Road - Wildwood to Deer Creek State Park

As part of the construction of the Upper Falls to Wildwood Segment, a construction road known as the "haul road" was constructed along the alignment of the next segment, from Wildwood to Deer Creek State Park. This haul road was constructed in order to move excess fill material to a future fill slope without impacting existing traffic on US-189 in Provo Canyon. As a result of the construction of the haul road, some of the impacts of construction of the Wildwood to Deer Creek State Park Segment have already occurred.

2000-2001: Additional Technical Studies for Wildwood to Deer Creek State Park

In 2000 and 2001, UDOT commissioned several additional technical studies to update the available information concerning the Wildwood to Deer Creek State Park Segment, and to address several outstanding issues. These studies included a second VE study; a geotechnical study, which considered the stability of the Hoover slide and several options for constructing a roadway across the slide; and an avalanche study, which considered several design options for a portion that lies in a known avalanche path. For more information on these studies, refer to Chapter 2.

2000-2003: Second SEIS

As noted above, the 1998 Stipulation required UDOT to conduct a pre-scoping meeting and complete a second supplemental EIS (SEIS) before proceeding with the next phase of construction of the Project, Wildwood to Deer Creek State Park.

In accordance with the 1998 Stipulation, UDOT held a pre-scoping meeting with the plaintiffs in the 1996 lawsuit on January 13, 2000. The pre-scoping meeting was held in Orem, Utah. Minutes of the pre-scoping meeting, along with comment letters received from two of the participants and responses to those comments, are included in Appendix A.

On February 24, 2000, the FHWA issued a Notice of Intent in the Federal Register announcing that a second SEIS would be prepared for the Project. The Notice of Intent stated that the termini for the project SEIS would be the same as the termini in the 1989 SEIS, but also noted that the Project examined in the 1989 SEIS was "nearly complete" from Orem to Wildwood. The Notice of Intent explained that this SEIS would focus on the Preferred Alignment developed in the 1989 SEIS, as modified in the 1995 Re-evaluation for the Wildwood to Deer Creek State Park Segment, and would take the requisite "hard look" for any new impacts as the result of those changes.

On December 19, 2001, the FHWA issued an Amended Notice of Intent in the Federal Register for this SEIS. The Amended Notice of Intent expanded the scope of the SEIS to include the proposed development of a recreational trail that closely paralleled the proposed highway improvements in the Provo Canyon. The Notice explained that the trail proposal involved the extension of an existing recreational trail from its terminus at Vivian Park (between Upper Falls and Wildwood) to the vicinity of the Deer Creek Reservoir Dam.

The December 19, 2001 Amended Notice of Intent also modified the termini for this SEIS, by changing the western terminus from I-15 in Orem to the Utah/Wasatch County line at Wildwood. All of the uncompleted portions of the Project - from Wildwood to Deer Creek State Park, and from Deer Creek State Park to Heber City - remained within the scope of this SEIS.

Current Status of Project Segments

For ease of reference, this section summarizes the current status of each segment of the original Project. As this summary makes clear, the original Project has been completed from Orem to Wildwood, and has not yet been completed from Wildwood to Heber City.

Orem to Murdock Diversion (Completed in 1986)

This section involved the upgrade of SR-52 (800 North) to four lanes from US-89 in Orem to US-189 at Olmstead Junction, as well as improvements to US-189 from Olmstead Junction to Murdock Diversion. Construction of these improvements took place between 1984 and 1986.

Murdock Diversion to Upper Falls (Completed in 1994)

This section involved the upgrade of US-189 to four lanes from Murdock Diversion to Upper Falls. Construction of this section began in 1990 and was completed in 1994. Following construction, accident data and public concern suggested that concrete median barriers may be needed at certain locations. The FHWA prepared a Re-evaluation in 2001 to address this change.

Upper Falls to Wildwood (Completed in 2001)

This section involved the upgrade of US-189 to four lanes from Upper Falls to Wildwood. During final design for this section, it was determined that some modifications were needed. These modifications were addressed in a Re-Evaluation prepared by FHWA in 1993. Based on the 1993 Re-Evaluation, the "Modified Twin Tunnel Alternative" was selected for this segment. Construction of the Upper Falls to Wildwood Segment was initiated in 1996. Shortly afterwards, a second lawsuit was filed against the project. The court denied a motion to halt construction. Construction of this segment was completed between 1996 and 2000, except for some final cut slope treatments, which were completed in 2001 and 2002.

Wildwood to Deer Creek State Park (Under Design; Programmed for Funding)

This section involves the upgrade of US-189 to four lanes from Wildwood to Deer Creek State Park. In 1994, UDOT undertook a VE study for this segment. In 1995, based on the results of the VE study, the FHWA and UDOT completed a Re-Evaluation of this segment. The 1995 Re-Evaluation identified a new preferred alternative, which shifted the highway away from the Provo River in the vicinity of the Hoover Slide. At the time of the 1996 lawsuit, construction of this segment had not yet begun. The 1998 Stipulation, which resolved that lawsuit, required preparation of an SEIS prior to the "next phase" of project construction, which was the Wildwood to Deer Creek State Park Segment. As a result of that stipulation, construction of this section has not begun.

During construction of the Upper Falls to Wildwood Segment, UDOT was allowed to construct a haul road along a portion of the alignment of the Wildwood to Deer Creek State Park Segment. See Chapter 4 for additional details on the impacts that resulted from construction of the haul road.

Deer Creek State Park to Heber City (No Ongoing Design Work; Not Programmed)

This section involves the upgrade of US-189 to four lanes from Deer Creek State Park to Heber City. This section has not been programmed for construction, nor has any design work been performed on this section since the 1989 SEIS. As a result, construction of this section has not begun, and the design of this section remains at the same conceptual level as existed at the time of the 1989 SEIS.

Purpose and Need for Proposed Highway Reconstruction

As indicated in both the 1978 EIS (FHWA 1978) and the 1989 SEIS (FHWA 1989a), the purpose and need of this Project has always been to improve the safety and traffic carrying capacity of US-189 through Provo Canyon, necessitating the correction of existing substandard geometrics and improvement of unsafe conditions.

In order to effectively evaluate whether this purpose and need still exists 10 and 20 years, respectively, since those analyses, and to determine the extent of any changed traffic conditions and use, UDOT commissioned an independent traffic analysis (Fehr & Peers 2000) of the I-15 to Heber City Project Area (Project Area). That analysis is included in Appendix B.

Accidents and Safety

The 1989 SEIS provided a detailed analysis of traffic accidents within the Project Area from 1979 through 1987, demonstrating a need for appropriate safety improvements. The Fehr & Peers study (2000) considered that analysis and also analyzed recent data from 1990 through 1999. They reported the annual average number of accidents during that period as 147 per year, which is fairly consistent with the 144 per year reported in the 1989 document. They also noted that although the various construction periods tended to camouflage trends, accidents in the completed (four-lane) portions of the Project have decreased 23 percent, while average annual accidents in the existing two-lane segment have increased 13 percent.

The overall average accident rate for the entire corridor from 1990 to 1999 was about 2.4 per million vehicle miles, considerably higher than the average rate of 1.8 on two-lane Utah highways. Fehr & Peers conclude that " . . . future data may continue to indicate a steady decline in crashes in the existing four-lane section of the corridor."

Traffic Conditions

The Fehr & Peers study (2000) addressed all traffic-related Project issues by reviewing and updating data since the previous analyses in order to: document traffic use patterns in the canyon, identify the overall demand for roadway improvements, and identify traffic issues that may have changed since those analyses. Traffic aspects considered included traffic growth trends, induced traffic, diverted traffic, capacity, and traffic changes since the earlier analyses.

Traffic Trends

Fehr & Peers (2000) analyzed the average annual daily traffic (AADT) from 1975 to the present day and found that traffic growth strongly mirrored the population and employment trends of adjacent counties (Figure 1-4). Statistical correlation analyses between Utah and Wasatch Counties, populations, employment, and AADT resulted in extremely strong correlations between traffic, population, and employment. They conclude that " . . . traffic growth is strongly tied to socio-economic growth of the adjacent counties, and is relatively unaffected by short-term impacts on parallel routes (such as the recent and on-going re-construction of I-15 in Salt Lake County or the prior upgrade of US-40 in Summit and Wasatch Counties)."

Although the volume of traffic in the Project Area has increased considerably since the previous studies, Fehr and Peers (2000) found that the seasonal and daily variations in traffic, with higher summer month and weekend usage (Figures 1-5 and 1-6), continue to suggest a large recreational

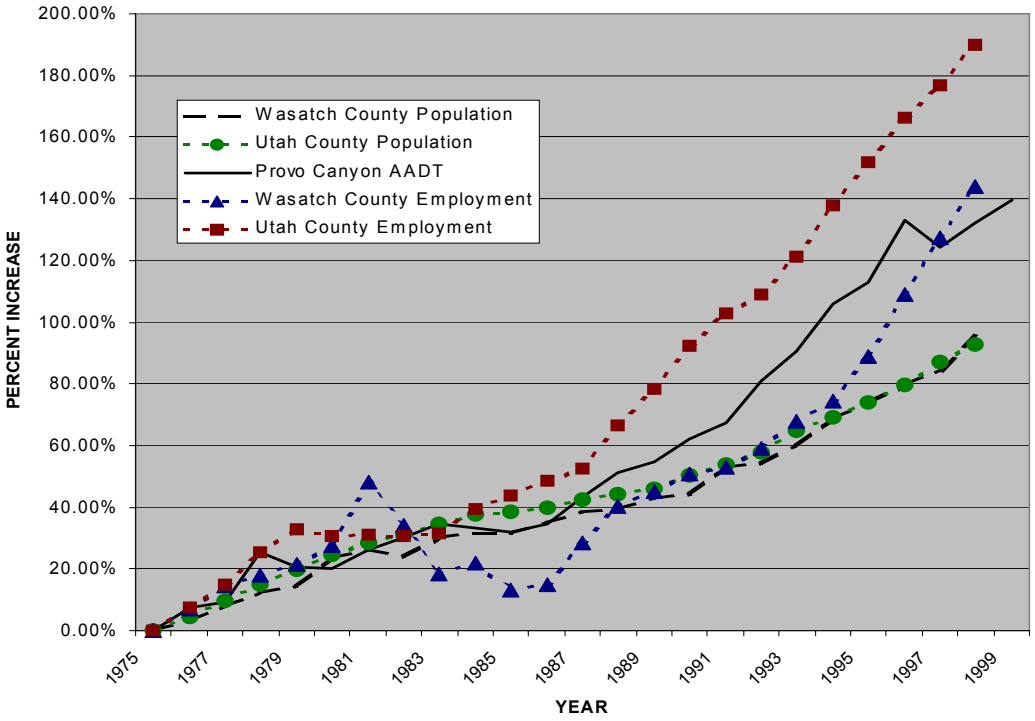


Figure 1-4. Population, Employment, and Traffic Growth in Provo Canyon since 1975.

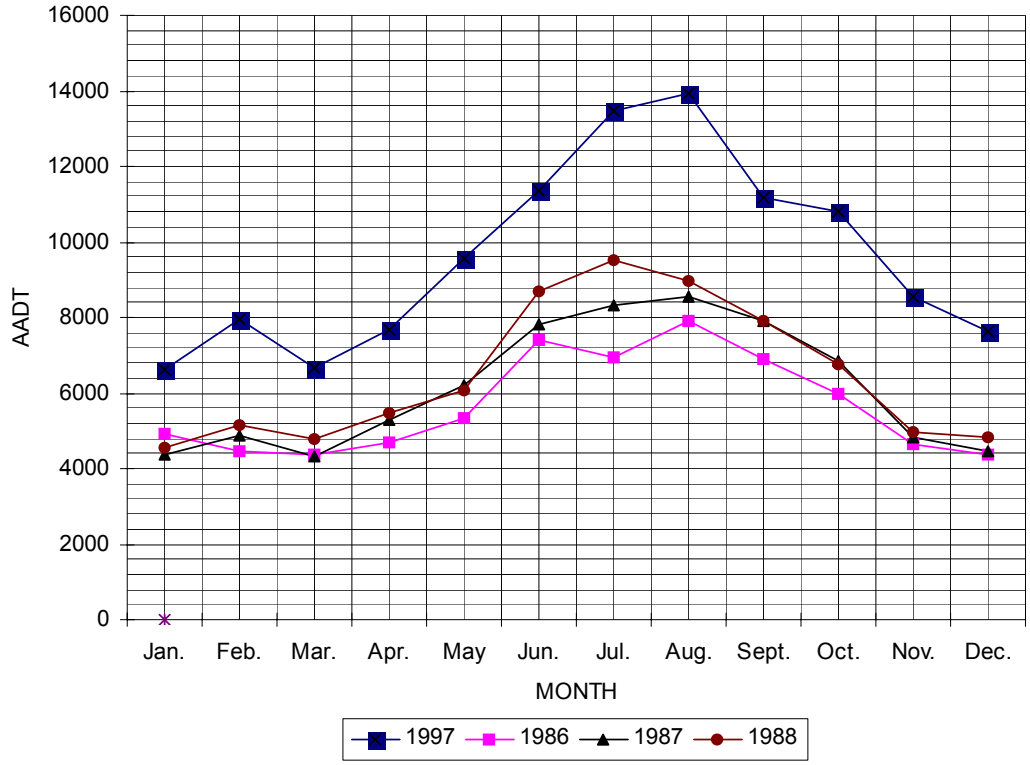


Figure 1-5. Seasonal Variation of Average Annual Daily Traffic (AADT) in Provo Canyon (Measured at Bridal Veil Falls).

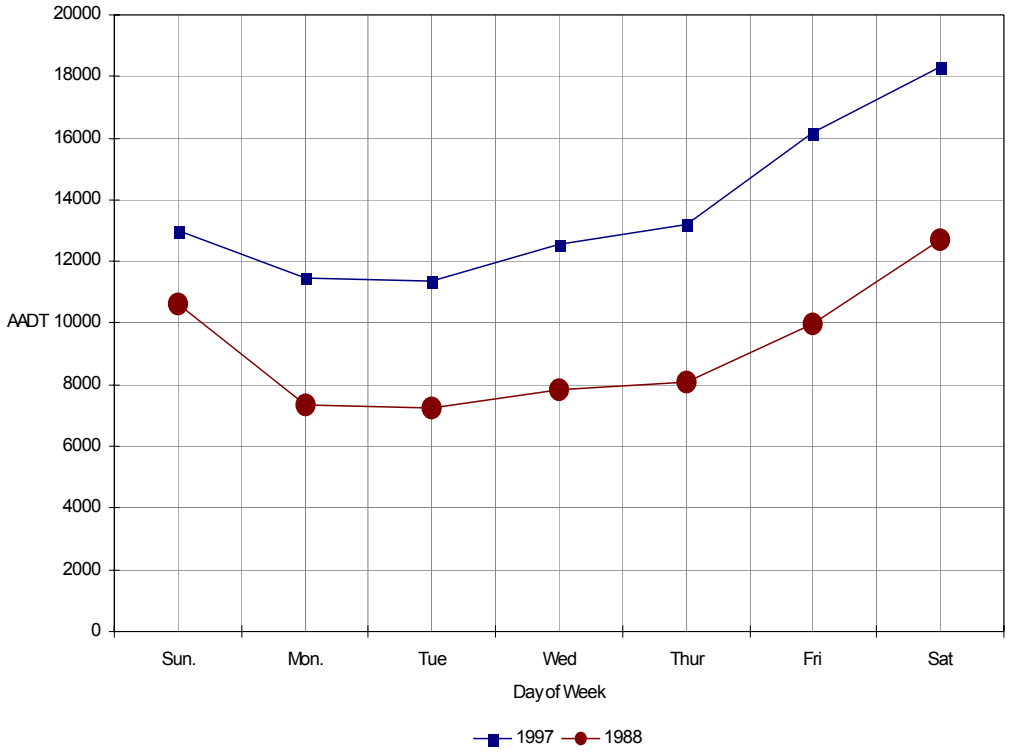


Figure 1-6. Daily Variation of Average Daily Traffic in Provo Canyon.

use component. However, they do predict that future economic growth in Utah and Wasatch Counties will tend to flatten these traffic variations.

It should be noted that although traffic is not evenly distributed throughout the corridor, actual traffic counts at various locations are not significantly different (Table 1-1). Several factors contribute to the variations, with the primary cause being the large recreational component of traffic that does not travel through the entire canyon and fluctuates considerably on a seasonal basis. Fishing and other aquatic activities tend to concentrate in the lower portions of the canyon, with additional travel to Sundance Resort near Wildwood for winter skiing and some summer activities. The residents of the small town of Wallsburg travel to both Wasatch and Utah Counties for employment and shopping on a regular basis.

Within Provo Canyon and the highway corridor, current zoning and a lack of developable land are expected to severely limit growth; however, growth is expected to continue at a substantial rate in the Upper Heber Valley. Most of this growth is accessed by US-40 from the Salt Lake Valley and the Park City area (see Table 1-1) rather than US-189, so highway improvements in Provo Canyon are not expected to change the pattern of growth in the Upper Heber Valley.

Table 1-1. Actual and Projected Traffic in Provo Canyon and Upper Heber Valley.

LOCATION	1989	1995	2001	2010	2020	2030
Canyon Mouth	8,675	10,155	16,705	19,145	25,191	31,237
Bridal Veil Falls (4 Miles up Canyon	6,645	9,135	12,160	15,832	20,331	24,831
Wildwood (Start of New Project)	5,825	7,335	8,475	11,531	14,558	17,585
Junction Local Road to Wallsburg (above End of New Project)	4,775	7,095	10,335	15,204	20,710	26,215
Junction with SR-113 near Charleston	4,025	5,545	7,980	11,962	16,349	20,737
Junction with US-40 in Heber City	5,095	7,060	10,250	15,042	20,427	25,811
US-40 at Wasatch/Summit County Line	6,440	11,490	15,925	22,683	30,585	38,487
Junction of US-40 with I-15	6,820	16,225	20,725	29,402	39,053	48,704

Source: Fehr & Peers (2000).

The Fehr and Peers (2000) study also reviewed traffic projections from the previous studies and found that subsequent actual traffic levels consistently exceeded projections from those studies because of much higher than expected population growth rates in the adjacent counties. For example, the 1995 Re-evaluation forecast a year 2010 AADT of 10,863, which was nearly exceeded by the actual year 2000 traffic counts of 10,285 AADT. Traffic predictions by Fehr & Peers (2000), based upon anticipated population and employment growth, were considerably higher than those of the previous analyses, ranging from 16,238 to 20,792 AADT. They conclude that " . . . the inability of the existing road to accommodate expected growth of traffic remains valid. Further, the improvements proposed in the earlier analyses appear to be necessary."

Induced Traffic

There is a growing national concern that increases in transportation supply create direct increases in transportation demand. This induced travel (increase in daily vehicle travel in specific geographic areas as the result of expanded highway capacity) is a concern to local governmental entities, as well as to Federal agencies such as the U.S. Environmental Protection Agency, which voiced this concern in preliminary Project scoping (EPA 2001).

Fehr & Peers (2000) noted that there is no single standardized method of estimating induced travel, but most approaches consider relationships between travel demand and travel time. Assuming that most work-related travel through Provo Canyon would occur during off-peak (not weekends or holidays) times and calculating off-peak travel time improvements projected from the proposed

highway improvements, they estimated (possible) induced increases in traffic volumes in the year 2020 at approximately 1,040 to 1,340 vehicles per day, or 6 percent of the forecast daily volume as a worst-case estimate.

Diverted Traffic

Although the Fehr & Peers report (2000) reported that ". . . there has been no measurable shift in truck traffic from I-80 (Parley's Canyon) to US-189 (Provo Canyon) during the reconstruction of I-15," it is anticipated that an improved US-189 through Provo Canyon would divert some long distance (interstate) traffic, particularly large trucks, from the expected Interstate 80/I-15 (I-80/I-15) routing. The 1989 SEIS identified the likelihood of this diverted traffic and estimated it as 160 additional trucks per day in the year 2010. The Fehr & Peers (2000) study projected approximately 200 additional heavy trucks per day in the design year of 2020, which is consistent with the 1989 SEIS estimate. Since truck accidents from 1979 to 1986 constituted a larger portion of overall accidents (11 percent) than their percentage of overall travel in the Project Area (7 percent) and are frequently more spectacular and severe (FHWA 1989a), any increase in the number or percentage of large trucks has been cause for concern.

Fehr and Peers (2000) reported that diverted passenger car traffic on an improved US-189 would be very minimal, with the premise that long-distance travelers would remain on the familiar Interstate highways and that the uncertainty of the surface streets and traffic signals would deter state-to-state drivers from the route. (The Project will provide a continuous four-lane cross-section on US-189 from Olmstead to Heber City. However, in both Orem and Heber City, US-189 connects to surface-streets, not access-controlled highways. Therefore, any traffic seeking to use US-189 as a "short-cut" between I-15b and I-80 would have to travel for some distance along surface streets with traffic lights in an urbanized area. According to Fehr & Peers, the need to travel on such surface streets limits the attractiveness of US-189 as a short-cut for long-distance travelers, including trucks.) Fehr & Peers estimated that diverted passenger cars would add only about 10 to 20 trips per day, or less that 0.01 percent of the daily traffic.

Capacity Analysis

In terms of traffic capacity of the existing highway facility, Fehr & Peers (2000) noted that ". . . it is clear that the present two lane cross section is inadequate." Their analysis identified a "bottle neck" or critical segment (the worst section of the subject corridor) from Wildwood to Wallsburg Junction, just past the end of the Wildwood to Deer Creek Segment (see Appendix B, Figure 20), and suggested that ". . . the level of service in the critical sections (generally below the Deer Creek Dam) on US-189 is arguably failing during peak periods today and will reach more chronic failure conditions by the year 2009, well within the design year . . ." (Appendix B, Figure 21).

Level of service (LOS) is a measure or rating of highway performance or capacity into six levels, A to F, that has been standardized by the Transportation Research Board of the Federal government. The minimum desirable LOS for rural highway sections is typically LOS D, although LOS C is desirable. Fehr & Peers (2000) reported that the proposed four-lane section will provide at least

LOS C through the design year of 2020, even with induced and diverted traffic incorporated into projected traffic levels.

Since the capacity of the proposed improvements meets anticipated traffic volume well beyond the design year, and any further expansion of capacity would face tremendous cost, environmental, and constructability constraints, the proposed design is considered to represent "full build-out" of the facility.

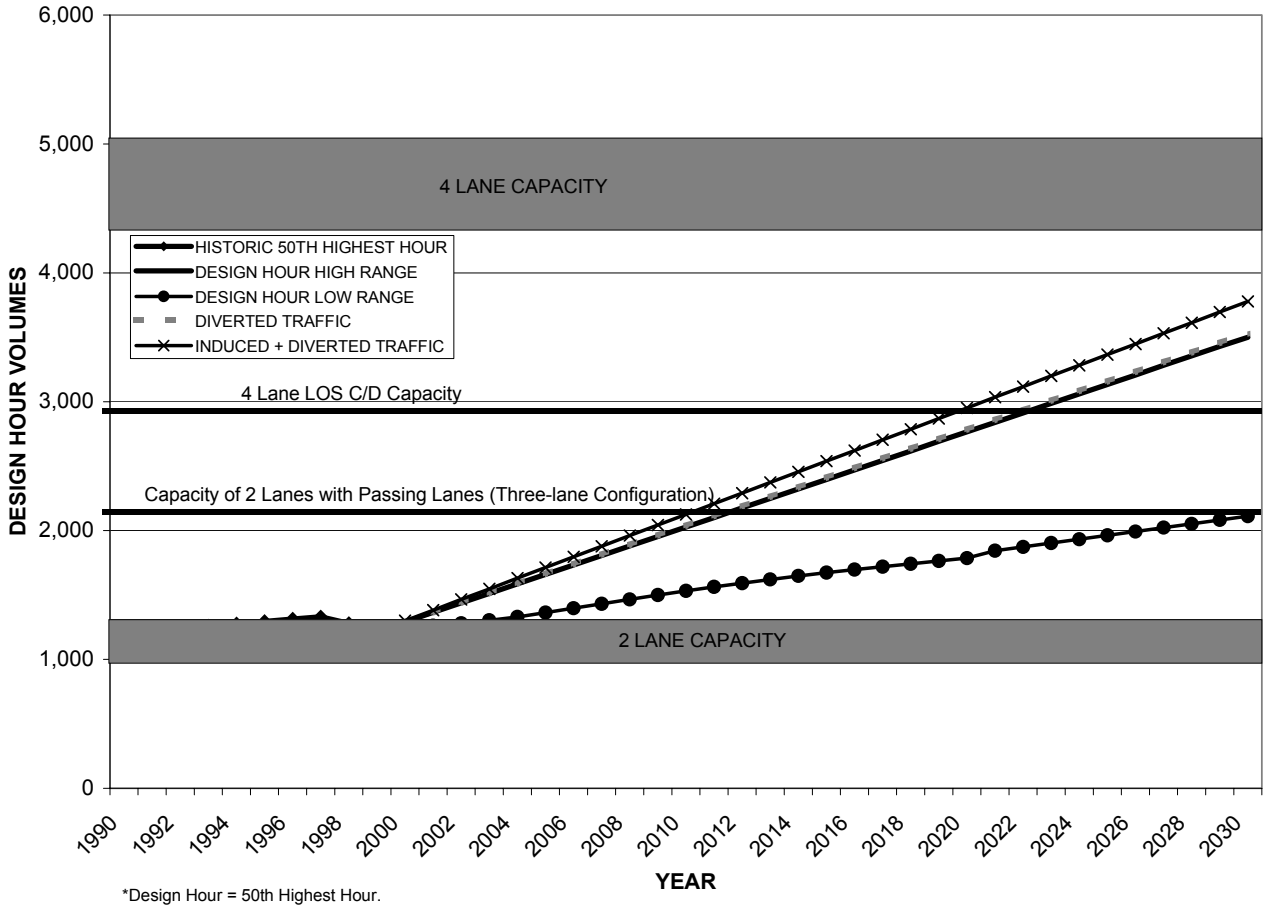
The possibility of reducing the proposed roadway section from four to three lanes at certain locations to minimize environmental impact has been discussed and studied numerous times during the Project.

- A traffic capacity study on the Wildwood to Deer Creek State Park Segment conducted by Centennial Engineering as a part of preliminary design during preparation of the 1995 Re-evaluation (BIO-WEST 1995), and provided in Appendix C, evaluated the existing two-lane alignment, two different three-lane alignments, and the 1989 four-lane alignment in terms of LOS provided but found that only a four-lane section would adequately handle traffic volumes projected at that time, which were considerably lower than those currently projected.

- Fehr & Peers (2000) noted that "Due to the variation of steep grades (as opposed to long sustained upgrades and subsequent downgrades), it does not appear that a three lane section could achieve either the capacity or safety benefits of the proposed four lane section." In addition, as noted in Table 1-1 and the Fehr and Peers report (2000), traffic volumes and thus LOS are relatively consistent through the Project Area, suggesting that lane reductions in some areas would not be effective in meeting the needs of the Project.

- An additional analysis by the UDOT Planning Office (Kaczorowski 2003) developed the capacity of a two-lane facility with passing lanes (a three-lane configuration) as shown in Figure 1-7. They summarized that "the design hour volume for the corridor would exceed this capacity in about 10 years beyond its construction or about 2015. Therefore a two-lane cross section with passing lanes would not meet our design standards."

- An additional safety analysis conducted by the UDOT Safety Office (Leonard 2003) evaluated the safety aspects of three-lane configurations, noting that another canyon highway with similar geometric characteristics experienced significant decreases in number of accidents and accident rate when reconstructed from a three-lane to four-lane configuration. They noted a number of safety concerns with three-lane road, and summarized as follows: "Based on our safety review, we believe a four-lane section is preferable over the three-lane section for the design of this project."



Source: Fehr & Peers (2000).

Figure 1-7. Provo Canyon Design Hour Traffic Capacity Analysis (UDOT Planning).

It should also be noted that UDOT is committed to aggressively pursuing the use of "Context Sensitive Solutions," which includes the principles of striving to be compatible with the natural and built environment, be an asset to the community, and address the transportation need. These solutions, as implemented during design and construction, will result in the minimization of the footprint of disturbance of the roadway and associated facilities, and thus impacts.

Purpose and Need for Proposed Highway Improvements

Based upon the updating and re-analysis of existing and future traffic conditions described above, the need for the proposed highway improvements demonstrated in the 1989 SEIS continues to be high within the uncompleted segments of the Project Area (Wildwood to Deer Creek State Park and Deer Creek State Park to Heber City). The purpose of the Project remains to provide appropriate improvements that will eliminate existing hazardous driving conditions and provide a facility that has the capacity to safely accommodate projected traffic for the next 20 years (FHWA 1989a).

PROPOSED TRAIL EXTENSION

Background

The Provo-Jordan River Parkway Trail (Trail) was established in 1973, with the original intent of connecting the headwaters of the Provo River in the Uinta Mountains to the mouth of the Jordan River at the Great Salt Lake. When complete, the non-motorized recreation Trail system will be 217 kilometers (135 miles) long and paved in most areas. Much of the necessary Trail development work along the Jordan River in the Salt Lake Valley has been completed or is in progress. The Trail system currently runs from the Great Salt Lake through Provo and Orem, and up Provo Canyon as far as Vivian Park. Portions of the Trail in Provo Canyon were built as part of the ongoing US-189 reconstruction in the area, and UDOT has committed to design the highway in a way that will not prevent future extension of the Trail.

Because this environmental documentation for the reconstruction of US-189 addresses the same area and resources as the highway, the Mountainland Association of Governments, representing a variety of local government entities, proposed in fall 2001 that the extension of the Trail from Vivian Park to Deer Creek Dam (Trail Extension) be included in the SEIS. The UDOT and FHWA agreed to the inclusion as mitigation for general highway improvement impacts and as an appropriate enhancement to the project, and planning in this regard was initiated. An Amended Notice of Intent announcing the addition of the recreational trail component to the Project was published by FHWA in the Federal Register on December 19, 2001. The Trail Extension termini extend from Vivian Park on the west (1.9 km [1.2 miles] west of Wildwood) to the vicinity of Deer Creek Dam (approximately 8 km [5 miles] east of Wildwood) on the east.

Purpose and Need for Proposed Trail Extension

Trail users have no safe, non-motorized access to the upper portions of the canyon and Heber Valley, and cyclists and pedestrians must use the highway to travel between these areas. However, narrow highway shoulders, heavy and high-speed traffic, and limited sight distances make using this section of highway a dangerous alternative. Completing all or even a portion of the Trail Extension would provide a safer alternative to riding and walking on highway shoulders and greatly increase the recreational experience. The Trail, which has been listed on the State and regional trail systems since 1973, was recently given high priority as a result of the Governor's Trails Initiative (State Parks 2001). Completing this Trail is also a recognized priority in the current Statewide Comprehensive Outdoor Recreation Plan (State Parks 1992). The Trail Extension between Vivian Park and Heber Valley represents an important component of and missing link in the regional trail system. On April 22, 2002, Utah received a National Scenic Byways grant for $774,022 from the FHWA to extend the Trail. This project is also a part of the approved FY-2002-2004 UDOT Statewide Transportation Improvement Program.